

Section 7-01 -- General Information

7-01.1 Introduction

Traffic safety systems are highway features designed primarily to reduce the severity of run-off-road accidents, prevent out-of-control vehicles from crossing the median, and decelerate errant vehicles. These features include guardrail, crash cushions, median barrier, end treatments, breakaway supports for signs and light standards, and truck escape ramps.

7-01.2 Standards

The Standard Plans contain design details for the construction of traffic safety systems. These designs are based on full-scale tests and typical conditions generally associated with new highway construction. Standard Plans cannot always be directly applied to all situations on existing roadways, and some design modifications may be needed. Modified or unique traffic safety system designs require review and approval of a Headquarters Traffic Operations Liaison.

As of October 1, 1998 all new, permanent installations of traffic safety devices shall meet National Cooperative Highway Research Program (NCHRP) Report 350 crash testing criteria. This report is the "Recommended Procedures for the Safety Performance Evaluation of Highway Features." Procedures are presented for conducting vehicle crash tests and in-service evaluation of roadside safety features or appurtenances. The purpose of the procedures is to promote the uniform testing and in-service evaluation of roadside safety features so that highway engineers may confidently compare the safety performance of designs that are tested and evaluated by different agencies. The procedures are directed at the safety performance of roadside

safety features; other service requirements such as economics and aesthetics are not considered.

The procedures are devised to subject roadside safety features to severe vehicle impact conditions rather than to typical or average highway situations. For vehicle crash testing, specific impact conditions are presented for vehicle mass, speed, approach angle and point on the safety feature to be hit. Three primary appraisal factors are presented for evaluating the crash test performance: structural adequacy, occupant risk and after-collision vehicle trajectory.

In-service evaluation was used in the final stage of development of new or extensively modified roadside safety features and has the purpose of appraising actual performance during a broad range of collision, environmental, operational and maintenance situations for typical site and traffic conditions. This report updates the guidelines for in-service evaluation first provided in NCHRP Report 230, recognizing the complex nature of vehicular accidents and the limited resources of agencies responsible for monitoring the performance of new or modified safety features.

Standards for traffic safety systems have evolved over time and continue to change in response to changing technology, research findings, and changes in the design and speed of vehicles. Consequently, many existing traffic safety systems do not comply with the latest design standards. It is not always economically feasible or cost-effective to upgrade these existing installations each time revisions are made to the current standards. Existing installations should be reviewed periodically so that cost-effective improvements may be made as necessary. When other major work is done in the area, such as rehabilitation or reconstruction projects, traffic safety systems should be brought up to current standards.